

MEMORANDUM FOR RECORD

**SUBJECT: Project Delivery Team Meeting – Roseau, Minnesota
Feasibility Study, Roseau River**

1. On Wednesday, March 30, 2005 beginning at 10:15 am the project delivery team meeting was conducted in the Executive Conference Room of the district office. Seventeen persons attended the meeting. Participants at this meeting included City Officials, Roseau River Watershed District, Minnesota Department of Natural Resources, Barr Engineering, U.S. Fish and Wildlife Service, and the Corps Study Team. A sign-in roster listing the meeting participants is attached as enclosure 1.
2. The purpose of this delivery team meeting was to discuss how the alternatives were screened to arrive at the selected plan and how to proceed with optimization of the selected plan within the financial and time constraints. The focus of the meeting was to present findings of final screening efforts to the Sponsor and agency representatives.
3. Noteworthy items coordinated and discussed during the meeting included:
 - Overview of the meeting with the Executive Committee where formalized approval was received for the change in scope and costs. The schedule was extended by about 2 months and costs were increased by \$186K.
 - The final screening of alternatives was completed, with the selected plan being the 50 foot diversion channel. This selected plan now needs to be optimized and initial indications are that the optimal diversion plan will be larger than the 50 foot channel and include some additional features. Some possibilities of additional features are non-structural solutions (relocating or elevating the low lying flood prone structures) or structural solutions (small in town levees or ring levees around suspect structures).
 - During the optimization the addition of ecosystem restoration and recreation will be analyzed, this can help the overall B/C ratio of the project increase and make it a more viable project. The cost share on these will be different than that of flood protection.
 - It was noted that it is still possible to have a Locally Preferred Plan. This could happen if the NED plan does not remove the city from the 100-year flood plain, which is a local objective for the study.
 - The screening of alternatives letter report has been completed and will be used for the ITR meeting which will be taking place on April 7, 2005.

- The City, DNR, and Watershed District discussed other flood recovery and mitigation activities taking place in the Roseau area. It was discussed that it is not necessary for the bonding bill to be passed for this project to continue, it will be necessary in 2006 when money will be needed for construction. Other activities in the area are going well and are proceeding.
- The project delivery team addressed questions regarding interior drainage and how the natural topography will contribute to moving water towards the ponding areas.
- An economic analysis was presented which showed the updated B/C and NED benefits along with a breakdown by reach of the effects the screened alternatives would have had in reducing damages. The NED benefits from the last meeting have increased primarily for 3 reasons, the use of the risk and uncertainty model, change in the H&H relationships, and increases in property values due to inflation. See enclosure 2 for the economic handout.
- There were issues regarding credit to levee primarily in the West Bank South reach (the levee protecting Polaris Industries). The current emergency levee will be modified to accommodate a trail and will no longer provide the level of protection necessary for credit to levee, due to already existing openings and future modifications.
- The restriction structure was described and nicely sketched by Scott Goodfellow to show how the structure worked. There will be further analysis regarding the structure and its effects on the environment and the project.
- There was an overview of some possible recreation and ecosystem ideas which may be incorporated into the project, these included nature trails, motorized trails, canoe trails, a sledding hill, parking lots, trail access, planting of native trees and meadows, scenic overlooks, and habitat restoration.
- The upcoming schedule includes the previously mentioned ITR meetings and a series of 4 public meetings in Roseau. These will consist of meetings with the DNR, landowners, flood control task force, and general public. These will take place April 13 and 14 in Roseau. A letter will be sent to land owners by the Corps indicating that there is a special meeting for them and that their land may be affected by the project.
- There was one breakout session focused on the credit to levee and what changes will be made to the present structure.

/s/

Ed McNally
Project Manager

/s/

Aaron Snyder
Community Planner

Enclosures 3

Sign in Roster

Economic Breakdown

CF: All Meeting Participants (via email)

Subject: Delivery Team Meeting on 30 Mar 05 - in Exec. Conf. Rm. District Office
RE: Roseau Flood Control Feasibility Study

Sign-In Roster

	<u>Name</u>	<u>Organization</u>	<u>Email and/or Telephone</u>
1.	Todd Peterson	CITY OF ROSEAU	218-463-5003
2.	Ed Fick	DNR	651-215-1954
3.	Bill Spychalla	BARR ENGR	952-832-2666
4.	Rick Carlson	CEMVP-PM-E	651-290-5259
5.	Dick Beatty	CEMVP-PM-E	651-290-5270
6.	Scott Goodfellow	CEMVP-EC-H	651-290-5635
7.	Ron Beck	RE-PA	651-290-5394
8.	Larry Scamling	RE-DA	651-290-5394
9.	JEFF HANSEN	CEMVP-EC-D	(651) 290-5649
10.	PETER VERSTEGEN	CEMVP-PAO	651 290 5202
11.	GRANT RIDDICK	CEMVP-EC-D	651 290-5594
12.	Jeff Stanek	CEMVP-EC-D	651 290 5731
13.	Gary Wolf	CEMVP-EC-D	651 290 5284
14.	Aaron Snyder	CEMVP-PM-H	651 290 5489
15.	Rob Sando	RRWD	218 463 8313
16.	Laurie Fairchild	USFWS	612 725-3548
17.			
18.			
19.			
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21.			
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24.			
25.			

ROSEAU, MN. ALTERNATIVES SCREENING REPORT
SUMMARY OF AVERAGE ANNUAL COSTS AND BENEFITS
Levee Alternatives

	25 Yr. Barrier	100 Yr. Barrier	500 Yr. Barrier
Total First Cost	\$22,996,000	\$26,952,000	\$29,996,000
IDC	<u>1,244,340</u>	<u>1,458,400</u>	<u>1,623,120</u>
Total Investment	24,240,340	28,410,400	31,619,120
Annualized First Costs	1,405,470	1,647,252	1,833,296
Annual O&M Cost	<u>126,478</u>	<u>148,236</u>	<u>164,978</u>
Average Annual Charges	1,531,900	1,795,500	1,998,300
Avg. Annual Benefits			
Damage Reduction			
Residential	883,900	975,500	981,200
Commercial/Industrial/Public	363,100	1,253,500	1,317,300
Automobile	7,300	10,600	11,000
Household Temporary Relocation	83,400	93,800	94,400
Infrastructure/Emergency Response	TBD	TBD	TBD
Flood Insurance Admin. Costs	TBD	69,300	69,300
Advance Replacement	<u>TBD</u>	<u>TBD</u>	<u>TBD</u>
Total Annual Benefits	1,337,700	2,402,700	2,473,200
Net Benefits	(194,200)	607,200	474,900
B/C Ratio	0.87	1.34	1.24

Assumptions:

1. Assumes a 50 year project life - 5 3/8% interest rate.
2. Assumes a 2 year period of construction.
3. Credit to existing levees.
4. Annual O&M estimated as a factor of first cost. (.0055*First Cost)
From Breckenridge/Wahpeton studies.

ROSEAU, MN. ALTERNATIVES SCREENING REPORT
SUMMARY OF AVERAGE ANNUAL COSTS AND BENEFITS
East Diversion Alternatives

	BW=50ft.	BW=150ft.	BW=350ft.
Total First Cost	\$11,630,000	\$20,900,000	\$29,740,000
IDC	629,310	1,130,920	1,609,260
Total Investment	12,259,310	22,030,920	31,349,260
Annualized First Costs	710,802	1,277,366	1,817,649
Annual O&M Cost	63,965	114,950	163,570
Average Annual Charges	774,800	1,392,300	1,981,200
Avg. Annual Benefits			
Damage Reduction			
Residential	424,400	699,700	887,300
Commercial/Industrial/Public	1,083,900	1,281,500	1,319,200
Automobile	7,700	10,200	11,400
Household Temporary Reduction	52,800	76,300	88,800
Infrastructure/Emergency Response	TBD	TBD	TBD
Flood Insurance Admin. Costs	TBD	TBD	TBD
Advance Replacement	TBD	TBD	TBD
Total Annual Benefits	1,568,800	2,067,700	2,306,700
Net Benefits	794,000	675,400	325,500
B/C Ratio	2.02	1.49	1.16

- Assumptions:
1. Assumes a 50 year project life - 5 3/8% interest rate.
 2. Assumes a 2 year period of construction.
 3. Credit to existing levees.
 4. Annual O&M estimated as a factor of first cost. (.0055*First Cost)
From Breckenridge/Wahpeton studies.

Roseau
Expected Annual Damage Reduced and Distributed
by All Plans for Analysis Year 2008
(Damage in \$1,000's)

Plan Name	Plan Description	Expected Annual Damage			Probability Damage Reduced Exceeds Indicated Values		
		Total Without Project	Total With Project	Damage Reduced	.75	.50	.25
Without	Without project condition	2464.82	2464.82	0.00	0.00	0.00	0.00
Plan 1	25 - Year Levee	2464.82	1127.18	1337.64	758.03	1231.56	1738.29
Plan 2	100 - Year Levee	2464.82	131.41	2333.41	1072.86	1742.07	2925.73
Plan 3	500 - Year Levee	2464.82	60.94	2403.88	1136.01	1819.21	3016.87
Plan 4	East Diversion 50' Bottom Width	2464.82	896.12	1568.70	712.42	1197.47	2082.71
Plan 5	East Diversion 150' Bottom Width	2464.82	397.06	2067.76	989.84	1578.24	2644.75
Plan 6	East Diversion 350' Bottom Width	2464.82	158.11	2306.71	1144.11	1802.65	2967.28

Roseau, MN
Expected Annual Damages by Plans

Reaches	Without	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6
Reach 6 - Ro - North EB	460,160	11,450 97.5%	40 100.0%	0 100.0%	312,260 32.1%	184,830 59.8%	82,110 82.2%
Reach 5 - Ro - North WB	73,330	5,960 91.9%	20 100.0%	0 100.0%	31,350 57.2%	11,020 85.0%	2,560 96.5%
Reach 4 - Ro - Central EB	428,980	54,180 87.4%	3,830 99.1%	220 99.9%	220,070 48.7%	110,190 74.3%	40,000 90.7%
Reach 3 - Ro - Central WB	272,200	93,110 65.8%	6,090 97.8%	330 99.9%	76,800 71.8%	20,900 92.3%	3,600 98.7%
Reach 2 - Ro - South EB	51,240	15,990 68.8%	1,350 97.4%	140 99.7%	36,030 29.7%	16,060 68.7%	5,180 89.9%
Reach 1 - Ro - South WB	1,132,610	893,280 21.1%	66,870 94.1%	7,040 99.4%	189,870 83.2%	30,370 97.3%	3,620 99.7%
Ro - US1	13,660	19,090 -39.8%	19,090 -39.8%	19,090 -39.8%	2,390 82.5%	410 97.0%	50 99.6%
Ro - US2	120	190 -58.3%	190 -58.3%	190 -58.3%	60 50.0%	10 91.7%	0 100.0%
Ro - US3	6,380	7,300 -14.4%	7,300 -14.4%	7,300 -14.4%	3,970 37.8%	1,970 69.1%	990 84.5%
Ro - US4	26,140	26,640 -1.9%	26,640 -1.9%	26,640 -1.9%	23,310 10.8%	21,300 18.5%	19,990 23.5%
Total Expected Annual Damage	2,464,820	1,127,190 54.3%	131,420 94.7%	60,950 97.5%	896,110 63.6%	397,060 83.9%	158,100 93.6%
Benefit		1,337,630	2,333,400	2,403,870	1,568,710	2,067,760	2,306,720

Plan Name	Plan Description
Without	Without project condition
Plan 1	25 - Year Levee
Plan 2	100 - Year Levee
Plan 3	500 - Year Levee
Plan 4	East Diversion 50' Bottom Width
Plan 5	East Diversion 150' Bottom Width
Plan 6	East Diversion 350' Bottom Width

Water Surface Profiles
Roseau, MN

X-Section 31442.86 - Reach 1 & 2

Reach 1 - Roseau South Reach West Bank/South of R.R. Tracks

Reach 2 - Roseau South Reach East Bank/South of R.R. Tracks

Alternative	2 Year	5 Year	10 Year	20 Year	25 Year	50 Year	100 Year	200 Year	500 Year	2002 Flood	1000 Year
Existing Conditions	1040.60	1045.60	1048.01	1049.73	1050.15	1051.14	1052.01	1052.52	1053.29	1053.73	1053.80
With Levees - Plans 1-3	1040.58	1045.60	1047.97	1049.73	1050.27	1051.37	1052.35	1052.87	1053.96	1054.70	1054.81
East Diversion 50' B.W. - Plan 4	1040.61	1044.81	1046.58	1047.88	1048.22	1049.28	1050.32	1050.92	1051.95		1052.41
East Diversion 150' B.W. - Plan 5	1040.61	1044.17	1045.76	1046.99	1047.26	1048.20	1048.96	1049.47	1050.33		1050.74
East Diversion 350' B.W. - Plan 6	1040.61	1043.51	1044.85	1045.87	1046.09	1046.97	1047.70	1048.26	1048.98		1049.29
Top of Levee Elevation											
25 Year Barrier - Plan 1											
100 Year Barrier - Plan 2											
500 Year Barrier - Plan 3											
	1053.15										
	1055.75										
	1056.72										
Credit to Existing Levees Reach 1	For this analysis assume no levee credit for reach 1.										
PFP Elevation											
PNP Elevation											
Credit to Existing Levees Reach 2											
PFP Elevation											
PNP Elevation											
	1050.00										
	Probability of Failure 100%										

Water Surface Profiles
Roseau, MN

X-Section 30781.33 - Reach 3 & 4

Reach 3 - Roseau Central Reach West Bank/Between R.R. Tracks & Hwy. 11

Reach 4 - Roseau Central Reach East Bank/Between R.R. Tracks & Hwy. 11

Alternative	2002										
	2 Year	5 Year	10 Year	20 Year	25 Year	50 Year	100 Year	200 Year	500 Year	Flood	1000 Year
Existing Conditions	1040.21	1045.22	1047.57	1049.17	1049.57	1050.39	1050.83	1051.00	1051.28	1051.53	1051.57
With Levees - Plans 1-3	1040.20	1045.26	1047.58	1049.24	1049.76	1050.71	1051.23	1051.42	1052.06	1052.65	1052.74
East Diversion 50' B.W. - Plan 4	1040.22	1044.45	1046.18	1047.44	1047.76	1048.77	1049.76	1050.27	1050.96		1051.22
East Diversion 150' B.W. - Plan 5	1040.22	1043.82	1045.41	1046.61	1046.87	1047.78	1048.48	1048.96	1049.78		1050.15
East Diversion 350' B.W. - Plan 6	1040.22	1043.18	1044.53	1045.54	1045.76	1046.60	1047.31	1047.84	1048.52		1048.81
Top of Levee Elevation											
25 Year Barrier - Plan 1	1051.97										
100 Year Barrier - Plan 2	1053.60										
500 Year Barrier - Plan 3	1054.53										
Credit to Existing Levees Reach 3											
PFP Elevation	1049.77	Probability of Failure 85%									
PNP Elevation	1048.74	Probability of Failure 15%									
Credit to Existing Levees Reach 4											
PFP Elevation	1046.36	Probability of Failure 85%									
PNP Elevation	1044.54	Probability of Failure 15%									

Water Surface Profiles
Roseau, MN

X-Section 30203.8 - Reach 5 & 6

Reach 5 - Roseau North Reach West Bank/North of Hwy. 11

Reach 6 - Roseau North Reach East Bank/North of Hwy. 11

Alternative	2002										
	2 Year	5 Year	10 Year	20 Year	25 Year	50 Year	100 Year	200 Year	500 Year	Flood	1000 Year
Existing Conditions	1039.83	1044.71	1046.81	1048.11	1048.38	1048.87	1049.11	1049.15	1049.20	1049.29	1049.30
With Levees - Plans 1-3	1039.80	1044.74	1046.81	1048.17	1048.47	1049.19	1049.53	1049.54	1049.80	1050.10	1050.15
East Diversion 50' B.W. - Plan 4	1039.84	1044.00	1045.60	1046.70	1046.97	1047.81	1048.49	1048.90	1049.39		1049.55
East Diversion 150' B.W. - Plan 5	1039.84	1043.41	1044.94	1046.03	1046.26	1047.05	1047.64	1048.03	1048.59		1048.87
East Diversion 350' B.W. - Plan 6	1039.84	1042.81	1044.14	1045.10	1045.30	1046.05	1046.67	1047.13	1047.69		1047.93
Top of Levee Elevation											
25 Year Barrier - Plan 1	1050.40										
100 Year Barrier - Plan 2	1051.67										
500 Year Barrier - Plan 3	1052.33										
Credit to Existing Levees Reach 5											
PFP Elevation		1048.50	Probability of Failure 85%								
PNP Elevation		1047.76	Probability of Failure 15%								
Credit to Existing Levees Reach 6											
PFP Elevation		1045.73	Probability of Failure 85%								
PNP Elevation		1044.05	Probability of Failure 15%								

Roseau
Expected Annual Damage by Damage Categories and Damage Reaches
for the Without (Without project condition) Plan and Analysis Year 2008
(Damage in \$1,000's)
Plan was calculated with Uncertainty

Stream Name	Stream Description	Damage Reach Name	Damage Reach Description	Damage	
				AUTO	CIP
Roseau River		Ro - North EB	Roseau North Reach East Bank/North of Hwy. 11	3.84	6.63
		Ro - North WB	Roseau North Reach West Bank/North of Hwy. 11	0.66	29.47
		Ro - Central EB	Roseau Central Reach East Bank/Between R.R. Tracks & Hwy. 11	4.06	14.83
		Ro - Central WB	Roseau Central Reach West Bank/Between R.R. Tracks & Hwy. 11	1.49	200.41
		Ro - South EB	Roseau South Reach East Bank/South of R.R. Tracks	0.43	0.00
		Ro - South WB	Roseau South Reach West Bank/South of R.R. Tracks	0.76	417.1073.29
		Ro - US1	Roseau Far South Reach - Not Protected By Levee	0.23	0.29
		Ro - US2	Roseau Upstream Reach 2 Benefited By Diversion	0.00	0.00
		Ro - US3	Roseau Upstream Reach 3 Benefited By Diversion	0.11	0.00
		Ro - US4	Roseau Upstream Reach 4 Benefited By Diversion	1.05	0.00
Total for stream: Roseau River				12.63	1324.93

Roseau
Annual Damage by Damage Categories and Damage Reach
thout (Without project condition) Plan and Analysis Year
(Damage in \$1,000's)
Plan was calculated with Uncertainty

Categories		Total
RES	TEMP RELO	
414.87	34.82	460.16
38.30	4.90	73.33
373.36	36.73	428.98
61.87	8.43	272.20
46.44	4.37	51.24
53.33	5.23	467.1132.61
13.13	0.01	13.66
0.12	0.00	0.12
6.27	0.01	6.38
24.76	0.33	26.14
1032.44	94.82	1132.61

1,132,610
9576 Levee Credit
1,075,980